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SCHOOL OF ENGINEERING
THE GEORGE WASHINGTON UNIVERSITY

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SCHOOL OF ENGINEERING, THE GEORGE WASHINGTON UNIVERSITY

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DEPARTMENTS

ON OUR COVER

Claire Chennault, a sophomore in the School of Engineering, leaves Tompkins Hall after a class.

Picture by Atwood Barwick

FRONTISPIECE

A key tube under development for the Air Force "cat eye"
Cut, courtesy of Westinghouse

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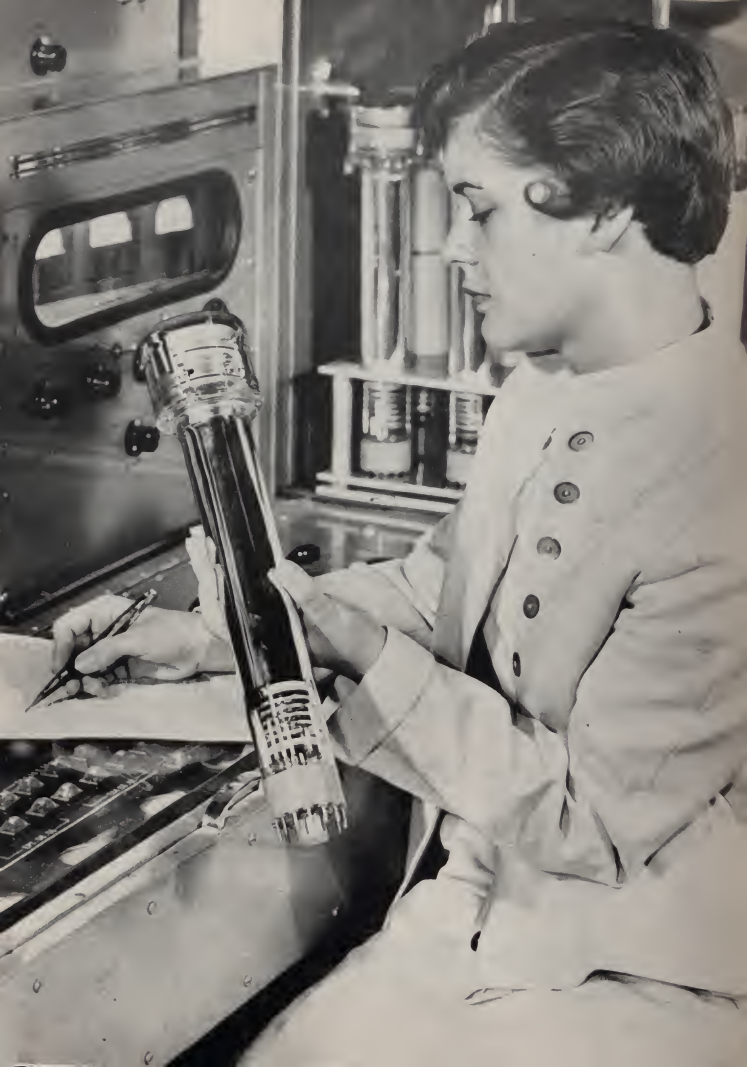

FACULTY PAGE
FOR WOMEN

THE WOMAN ENGINEER

by Mrs. Bernadine L. Dunfee
Lecturer in Electrical Engineering

With the understanding that this issue of the MECHELECIV is to focus attention on women, whether as engineers or as the wives of engineers, I would, before continuing the principal theme of this article, like to salute the wife of a *student* engineer. A special tribute to her, who, of necessity, must sacrifice a great deal and do so with grace and serenity, while lending encouragement to the "lost" husband.

Further comments are directed particularly to the engineering student, and, since a woman as an engineer is not different from a man as an engineer, they should apply equally well to both. Although one dislikes being "preached at," it is wise to pause occasionally and consider such things as direction, ambition, values, etc. A person's choice of direction is often governed by his sense of values. Oftentimes a given profession is chosen because the student has visions of wealth, honor, prestige, or of "something for nothing." The glamour may blind him to the work involved, the drudgery that often comes, and the details that will plague him. An individual and, most certainly, an engineering student so directed. will find too late that he has misplaced himself.

Again, the graduate engineer in seeking employment, may have an equally distorted sense of values. In this scientific era the engineer or physicist can "write his own ticket" — the demand far exceeding the supply. It is so tempting, therefore to permit the dollar to sway one's judgement. Money is an important consideration and with our economy geared as it is, one can hardly condemn the engineer for seeking and accepting the highest salary possible. Even so, it should be emphasized that, strange as it may seem, there are other parameters, equally valuable, that should be considered. It would be well to list a few of these.

(1) The employer or supervisor, should be evaluated. He can set the tone of the working environment. Nothing can compensate for a selfish or inconsiderate "boss" who takes unto himself all the credit or who has no appreciation of the ideas and imagination of his employees.

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THE ENGINEER'S WIFE

by Mrs. Martin A. Mason

To the women behind our engineers:

Having been asked to write a few words to you, I am, for me, strangely as a loss for words. What can I say to you who have helped these men through their engineering training, as many of us have.

You and I know how much time and energy it has taken on both sides. We all agree, I am sure, that it was well worth the seemingly endless struggle. The end product is an individual, and what engineer is not an individual — well rounded, useful, and a much needed citizen.

Engineering requires a lot of effort. time, patience, and know-how. Our job, to stand behind these "our men," is one that we do, knowing that they are doing a much needed job in this, our modern age. Their job is not only important, it is essential to the progress of our times. In looking around us there is little we see that does not need an engineer's help — either in building or in maintenance. Everything from the food we eat and the clothes we wear to the houses we live in and the highways we drive on, needs an engineer. Ladies, let us be proud of these men and hope that we can bask, just a little, in their reflected glory.

There are also those women who have chosen engineering as their profession. To you I offer a salute in deep humility. It is a wonderful field for you to enter from both the standpoint of accomplishment and also in giving this otherwise male world a woman's point of view. My congratulations to you and much success in your work.

To each of you I extend greetings. I wish that we could all meet. Each year, I am fortunate enough to meet some of the students and their wives. It always seems sad that, for numerous reasons, it is difficult for us to get together. Maybe we should form an auxiliary. I am sure that the other faculty wives would join me in a wish to become better acquainted. Until the time of our meeting, may I wish you the greatest success in "your chosen career"—Engineer or Housewife.

"SO YOU'RE AN ENGINEER!"

by Mrs. Marjorie Rhodes Townsend B. E. E. '51

"So you're an engineer! Do you build bridges?" I can't count the times I've been asked a question like that one, or this one: "Someone told me you're an electrical engineer — do you fix your own television set?" This seems to be the ultimate accomplishment an engineer can claim. This latter question comes from more enlightened individuals, and is considerably closer to the truth than the first. As a matter of fact, we have managed to keep our set out of the shop. My obstetrician-husband is turning into an excellent TV repairman and, with a little more training, he'll be able to fix ours without any coaching. However, lacking the proper test equipment at home, we refrain from working on other people's sets.

The general public is becoming more educated to women in science, but "ohs," and "reallys" are still generated when I am introduced as an engineer. The picture which the thought of a woman engineer conjures up must be a sister to the "Wicked Witch of the West." When I was out in California this fall to give two papers at the Symposium on Underwater Sound, a high school friend of mine, now living there, very graciously gave a cocktail party for me. None of her friends were "in science," and all she told them was that I was an electrical engineer. Apparently they were amazed to find that I was a human being also.

Now that I have mentioned Underwater Sound, I had better explain myself a little. Three months before I was graduated from G.W.U. with a B.E.E. (Communications), I went to work in the Sound Division of the Naval Research Laboratory. My job as an "electronic scientist" is to help develop improved sonar displays and techniques that are applicable to antisubmarine warfare. It is extremely interesting and challenging work. (For the benefit of the girls reading this, I'll add a few remarks. During the six years I've been with the Naval Research Laboratory, the increased responsibility of my work and my promotions have kept pace with the rest of the engineers in my group). My only regret is that I am not always able to carry my share of the load on field trips. The Navy is extremely narrow-minded about taking women out on their ships — that, at least, is still a man's domain — but these barriers are slowly being dissolved, and it is now possible to go out on one-day trips. Thus the disadvantage of being unable to see the equipment in actual operation is disappearing. And, I must admit, the thought of leaving my three small boys for five or six weeks is not at all appealing.

Many women have the ability to be engineers. All it requires is an interest in and aptitude for mathematics and science. Unfortunately, the idea that it is strictly a man's field still exists and keeps many good potential engineers away. True enough, some of the more rugged phases might not be attractive to women, but the field of electronics is wide open and growing rapidly. Working with miniature and sub-miniature tubes and components, and the fast-growing field of transistors, could be excellent fields for women. The design and testing of electronic circuits and systems can be very challenging and exciting work.

As the situation exists now, you will occasionally feel that you are in a golffish bowl. If you have an opportunity to attend many meetings, you'll find that a great many people, whom you have never met, know who you are. When the chairman at a meeting says, "So you're the lady engineer — well, well, well!" you might look around for one of those wells to sink into. The consolation of these remarks is that you *are* a lady, and are treated as such. The men with whom I work are careful to make sure that I don't lift anything too heavy, and are generally quite considerate.

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— do you fix your own television set?

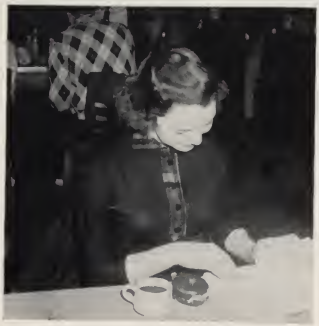
A WOMAN STUDIES ENGINEERING

This is Claire Lee Chennault, a sophomore in the School of Engineering. Claire is one of the many young women of today who are turning to engineering as a career instead of teaching or social work. Claire is pictured here in a Drawing Lab. Although as a sophomore she is not taking Mechanical Drawing or Descriptive Geometry, like any other engineer she spent plenty of time on these two courses in her freshman year.

A busy day for Claire begins with a class in Dynamics at 9:10 a.m. Claire is the only girl in her class which is held in the new Tompkins Hall of Engineering. Here Professor Hardy explains a problem in Dynamics to Claire. As a sophomore this is the only "real" engineering subject she is taking. The rest of her courses are requirements for the Bachelor of Science in Engineering degree which she hopes to get in another three years and include physics, speech and English.

Claire is a sophomore in the School of Engineering and is planning on taking the degree of Bachelor of Science in Engineering, although she has not yet decided on a group option. She is really interested in going into architecture, because she feels that in architecture she can "see" what she is accomplishing. Before she goes on to an architectural school, however, she will get her degree from G. W.

Claire's father is a colonel in the Air Force and the well-traveled Miss has lived in Germany and Spain and toured most of continental Europe. She has also been to Tangiers in what was formerly Spanish Morocco, which she thinks is the most



Claire skims quickly through her Spanish book over a cup of coffee in the Student Union. She waived her basic Spanish requirements and is now taking Spanish Conversation. This is the only elective course that Claire can take during her sophomore year. She chose Spanish because her father, a Colonel in the Air Force, is stationed in Madrid, Spain, and she plans to spend her summers there with him.

Demerits are posted on the Bulletin Board in the Air Force ROTC Building. Once a week at least Claire must check the board to see how many more demerits she has—usually quite a few, she says. Claire is a member of the Angel Flight, a women's basic AFROTC group which drills once a week either at the University or on the ellipse. If she decides to go on with her AFROTC next year she will become a member of the women's cadet corps. As a cadet she will receive the regular Air Science instruction offered at the University and upon graduation will be commissioned a second lieutenant in the Air Force.

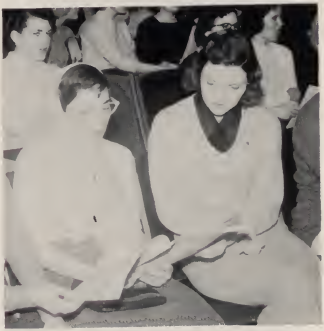
fascinating place in the world.

Her family lives in Madrid, Spain, right now and she spends her summers there with them. She has become a great "aficionado" as far as bull fights are concerned and can talk learnedly of bulls and bullfighters. Her favorite is one of the newest "greats," Gregorio Sanchez.

At school, in addition to being in Zeta Tau Alpha, social sorority, and on the Engineer's Council, she is a member of Big Sis, a freshman orientation group, and Flying Sponsors, a women's ROTC social group. Just lately, among other things, she was one of the five candidates for AFROTC queen.

One Wednesday evening every month finds Claire at the Engineer's Council meeting. She is one of the two sophomore representatives on the Council this year. Here Claire concentrates on a report by Tony Lane (she thinks but can't really quite remember who was talking), Engineer's Representative to the Student Council.

In the physics laboratory Claire examines one of the models used to demonstrate crystal structure. Claire is taking Physics 8 now, the last in a series of four basic physics courses. Physics 8 is one of the prerequisites Claire must have for an upper division physics couse in Electronics she must take during her junior year.



Tuesday and Thursday nights generally find Claire practicing with the University's Glee Club. The group's last performance was at the Cherry Blossom Festival where they sang such old favorites as "Dancing in the Dark," "Blue Skies" and "April in Paris." Claire lives constantly in fear that "Doc" Harmon, director of the Glee Club will notice her and make her stop singing — she has a terrible voice, she says. However we doubt that fact. She also sang with her sorority for the annual University Panhellenic Sing. After Glee Club practice is over, Claire will return to the dormitory to put in three or four hours of good, hard study before she goes to bed, unless she is too tired, in which case she will either knit or make plans for the wonderful summer ahead in Spain with absolutely no physics, dynamics or calculus to worry about.

PARTNERSHIP ENGINEERING

(Continued from page 16)

Ladies Home Journal).

If you haven't previously learned to think graphically, you'll soon be taught, for nine times out of ten when you ask him a question for instance, about his work or studies, he will willingly oblige you with a little chalk-talk. He is also famous for his functional maps to a seemingly inaccessible spot in the Metropolitan Area. You'll find these neat maps with their *printed* landmarks much more satisfactory than detailed verbal directions ending with, ". . . you can't miss it."

Finally, it is often necessary to curtail or delete conversation during strategic study hours. If there are little heirs or heiresses, a certain amount of interest is added to the maneuver. As for your inclinations to converse, fleeting opportunities may present themselves when he surfaces occasionally. However, be a bit cautious if you note a lot of slide rule activity accompanied by a cloud on the brow. This could well mean an uncooperative problem and it wouldn't be the time, even if there is a pause, to break in and discuss the baby's two new teeth. In case you have to bottle too much conversation, remember that vacations handily arrive every now and then and can be used as decompression chambers.

In conclusion, then, keep your eyes on those ever unfolding horizons and enjoy the benefits incumbent in a cooperative project with the partner of your choice.

After glancing out of the window, I would like to make one more suggestion. The sun has come out and it is a beautiful afternoon, so stack the dishes while your husband piles up his books and then go for a nice, Sunday afternoon walk.

THE WOMAN ENGINEER

(Continued from page 9)

(2) The associates with whom one will be working, should be considered. Peace at home, after the workday, cannot erase the effects of friction, jealousy and harsh words encountered during the day.

(3) The working environment where, at least, one-third of each day is spent should be viewed in all of its aspects. Is it conducive to learning, to working, and to study? (The engineer not interested in these should not be one.)

(4) Last, but equally important, the inherent ability and temperament of the engineer should be known to himself and treated accordingly. Is research, development, sales, testing, teaching, or some other field indicated? Government, industry, educational and research institutions — all provide equal opportunities when all parameters are plugged into the equation.

These thoughts were not introduced as new and startling ideas, indeed, they have been repeated many times over. Neither do they complete the list. They merely serve to remind one to pause and contemplate those factors which will pay off in the long haul.

"SO YOU'RE AN ENGINEER!"

(Continued from page 12)

Sometimes I find it a distinct advantage to be a married lady engineer. The thought seems to lurk in people's minds that women go into a man's field like engineering in order to catch a husband. In fact, there was a wager on the line when I went that I would get marri d and never graduate. That gentleman had to pay off. I married all right, but I graduated in spite of it, or it might have been because of it. My sorority sisters often commented how lucky I was having "all those men" in my classes. What they didn't realize was that a large percentage were married veterans returning after World War II to complete their education. Another fair-sized percentage were serious students — the engineering curriculum is far from easy—who felt they could not afford time from their studies to date. This is exemplified by the lack of engineers who join social fraternities Of the others, many already had steady girls. I did date engineers in school, but only a few. Most of the boys I went out with, I met through my sorority sisters, either at fraternity socials or by direct introduction. My husband was introduced to me as a pre-med student by one of his fraternity brothers whom I already knew and who, incidentally, was an engineering student. Believe it or not, it is possible to get tired of being surrounded by men, even the exceptional ones I have at home, so I belong to several women's organizations in order to get a chance to talk to other women.

To many people I am still a novelty, but this wears off quickly with the people you work with every day. To be a woman in engineering, you should either enjoy being in the limelight occasionally or be completely oblivious to other people. At home, though, I'm just a wife and mother as any normal young woman might be —that is until something goes wrong with the television set. So far my children (ages 5, 3, and 2) don't realize that there is anything unusual happening when "Mommy" fixes it. How long can I postpone the shocking day of revelation?